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ABSTRACT

Much of this annual report of the Scottish Council for Research in Education consists of lists and reports, including names of officials, budget, titles of dissertations of Scottish university students, and titles of published articles relating to the Council. Two of these articles are included in the report. One describes methods of observing teaching strategies of teachers in the classroom (interaction analysis). The other is an article on compensatory education, which examines the development of intelligence, the issue of equal access to higher education for working class people, and the general question of whether education for working class people, and the general question of whether education is a useful or necessary dimension in helping people achieve economic or personal advantages. Reports are also presented on projects undertaken by the council. (CD)

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THE SCOTTISH COUNCIL FOR RESEARCH IN EDUCATION

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TWENTY-SEVENTH ANNUAL REPORT 1974-75

U.S. DEPARTMENT OF HEALTH EDUCATION & WELFARE NATIONAL INSTITUTE OF EDUCATION

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ISSUED NOVEMBER 1975

THE SCOTTISH COUNCIL FOR RESEARCH IN EDUCATION

FORTY-SEVENTH ANNUAL REPORT 1974-75

Offices:
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A social gathering at which members of the Scottish Council for Research in Education entertained the members of the Council of the International Association for the Evaluation of Educational Achievement at the latter's meeting in St Andrews in September 1974. With Professor J D Nisbet, Chairman of SCRE (centre front) and Professor Torsten Husén, Chairman of IEA.

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THE SCOTTISH COUNCIL FOR RESEARCH IN EDUCATION

Forty-seventh Annual Report 1974-75

COUNCIL (Chairman—Professor J D Nisbet)

Chairman's Report

An exhibition relating to the Council's activities, which is to be on display at the Council's Annual General Meeting on 19th September 1975—and on a number of other occasions—is entitled *Research in the Service of Education*. This title is indeed an appropriate one to describe the aims and activities of the Council. Its declared policy is to provide a service to education in Scotland; but it is not always easy to know how best to do this, or to find the resources to do it. The several parts of this Annual Report outline the variety of ways in which the Council and its staff have worked to carry out this policy.

The most direct form of service provided to the educational community is that provided by the Research Services Unit. The Unit's task is to respond to inquiries and requests for assistance, and its report (on page 19) shows the way in which the range and volume of its activities have increased. The Unit will welcome inquiries from individuals or organisations to whom it might be of help.

The Council exists to conduct research, and it is through research into educational problems that the Council must strive to make its main contribution. Which are the problems that it should tackle, and which can it tackle with reasonable expectation of success? Decisions on research projects are made in a variety of ways. Some projects are financed from the Council's own funds, but increasingly projects are arranged as "contract research". Two of the Council's recent national projects, *Pupil Profiles* and *Awareness of Further Education*, are examples of this form of arrangement. The principle of contract research was adopted by

the Government in 1972 on the lines of a customer-contractor relationship recommended by Rothschild: "The customer says what he wants; the contractor does it (if he can); and the customer pays". The arrangement of contract research in education, however, is more difficult than this, and the procedure which is evolving in discussion between the Council and other educational bodies in Scotland might be better described as "negotiated research". The customer does not simply present us with a problem and tell us to go ahead and find the answer. Instead, the first step in the process is that Council staff are invited to a meeting where officials or teachers outline their concerns. There is a general discussion, and a second meeting is held where the staff explain the contribution which they think research can offer. On this occasion, there is a fairly lengthy discussion in which misapprehensions are cleared up and alternatives are explored, and the customers either agree that research would be useful to them or decide that it would not help to solve their problems. If they agree, there is a third meeting in which a costed project is presented for discussion, and sometimes further meetings are required until agreement is reached. Decisions on research projects are thus based on negotiation between researchers and customers, each accepting and respecting the other's contribution to the proposal. This pattern of research funding has been developed particularly successfully in Scotland and credit must be given to the helpful and understanding support of the Scottish Education Department and its Research and Intelligence Unit.

The Council also undertakes research on its own initiative, on topics which are considered to have relevance and priority. Some of these projects are financed from the Council's own funds. For the rest, and increasingly for the major part, applications to outside funding bodies for grants have to be made by the Council. In a period of growing competition for limited funds, the Council is fortunate to have secured two recent grants from the Social Science Research Council for the *Scottish Comprehensive Schools: Teachers' Classroom Management Strategies* and for the *Case Study of a New Scottish Open-Plan Primary School.*

There are also small grants which the Council itself makes to research workers to enable them to carry out projects which are considered important and worthwhile. Two such grants were made during the year, to Dr Nigel Grant and to Dr T L Pilkington.

If research is to be of service to education, there must also be close and effective links with the teaching profession, the public, and the research community. Communications are thus of crucial importance, and the Council's efforts in this direction are outlined in the report on the work of its Communications Committee by Mr Joseph Dunning, who has been its Chairman since 1972.

Although Mr Dunning remains a member of the Communications Committee, he has requested that he be not reappointed its Chairman. The Council expresses its thanks to him for his services.

Perhaps the most important factor in determining the effective contribution of research is the methodology or style in which the research is done. The Council staff under the leadership of the Director have been developing a style of research based on close involvement with schools and teachers. In the past the popular (but not quite accurate) image of the researcher was of a person who sends out tests and analyses the results by computer in his office. This is certainly not true of the Council's projects, which involve classroom observation and collaboration with teachers and discussion with them of the design and of the results. This style of research is reflected in a recent publication, *Space for Learning*, which has attracted considerable interest among teachers.

One striking change in recent years is in the number of the Council's research and technical staff. Between 1965 and 1970 the staff increased from seven to 10; now, in 1975, there are 26 research and technical staff working for the Council, and of these 12 are financed by research grants from outside bodies. This change has reflected both a change from research conducted by volunteers working on a part-time basis to that conducted by teams of professional researchers. It has also reflected an increasing demand for the guidance that research can yield. The increased number of staff employed has required that Council and staff should re-examine their working relationship; and an important step forward was taken with the Council's decision to invite staff representatives to take part in Council meetings.

The Council has received visitors during the year from America, Australia, Denmark, India and New Zealand, and Dr E Milner of the City University of New York, has been a visiting scholar. In October 1974, the SCRE was host to the Conference of the International Association for the Evaluation of Educational Achievement. The list of internationally distinguished scholars who took part included B S Bloom, T Husén, R L Thorndike and others from Australia, Belgium, England, Finland, Germany, Ireland, Israel, Japan, the Netherlands, New Zealand, Poland, Rumania, Sweden and the USA.

We record with regret the death of Mr William Hogg, the Council's first Administrative Officer, and of Dr Norman T Walker, a founder member who served on the Council for over 30 years. Among the members who have retired on the reconstitution of the Council in 1975, four had been members for over 10 years. Mr R B Forbes, the retiring Chairman, first became a member of the Council in 1964. He played an important role in planning the new structure of the Council, and led the Council successfully through the difficult three years following this reorganisation in

1972. Dr D M McIntosh's distinguished service is well known and was acknowledged in the 1971 report when he retired after 22 years as Chairman of the Executive and 12 years as President. Mr J Urquhart first joined the Council in 1964, and Mr J A Smith's appointment as Convener of the Bilingual Committee was in 1955. The Council wishes to record its gratitude to them all and to other retiring members.

COMMITTEES

Finance and General Purposes Committee (Chairman—Mr W S Charles)

The accounts of the Council for the year ended 15th May 1975 reflect a major change in the type of funding currently available for educational research in Scotland. Whereas formerly the Council's income was made available unconditionally so that it could be allocated to projects solely of the Council's own choosing, an increasing proportion—17 per cent in 1974-75—now relates to specific research projects. It is anticipated that this trend will continue and that the maintenance of the current level of the Council's activities, at least in the short term, will depend on the amount of such funding.

Despite the uncertain economic climate and exceptional inflation rates during 1974-75, the Council managed to maintain its planned programme of in-house research.

The Council is indebted to the Scottish Education Department for the grant of £85,000. This represented an increase, in respect of pay and price rises, of some 22½ per cent over the grant paid in the previous year.

Grants paid by the local education authorities were at the rate of 2p per enrolled pupil as in 1973-74. Certain arrears of grant that had arisen in preceding years were met in full by local authorities prior to their being succeeded by the new regional authorities. Discussions are presently being held with the Convention of Scottish Local Authorities over the basis and level of grants from the new regional authorities for 1975-76 and later years. It is anticipated that the previous close relationship between the Council and the education authorities will be maintained and that they will continue to provide the Council with substantial financial support.

The Council is also grateful to the Educational Institute of Scotland, its local associations, and various other organisations for their continuing support of its work including those bodies providing finance for specific research projects.

Because of the growth in externally funded research and the need to control expenditure within the more severe limits imposed by general economic conditions, the accounting system used in previous years has been improved to provide a more accurate analysis of the expenditure incurred on individual research

projects. For this reason, certain comparative figures for 1973-74 have been shown in the annual accounts in total only.

This last year saw also the introduction of a Maintenance Fund. The new fund, which is intended to cover annual fluctuations in expenditure on leasehold property repairs and maintenance, will be maintained by regular transfers from the revenue account.

Communications Committee (Chairman—Mr J Dunning)

It can well be argued that communication is the Council's prime function. It is certainly true that research conducted by the Council achieves its fruition only when its results are communicated to others. But the Council has a wider function than to publish its own research findings: it has also the task of maintaining a public and professional awareness in Scotland of relevant educational research wherever conducted and of educational issues that are, or should be, the subject of investigation.

The one publication by the Council in the current year relates to the one investigation completed within that time, the Information Retrieval Feasibility Study. The report, by the Council's Assistant Director, Mr John L Powell, is entitled *Information Retrieval in the Field of Education: a report on the SCRE Information Retrieval Feasibility Study.*

The publication of the second volume of Dr Craigie's *Bibliography of Scottish Education*, that covering the period 1872-1972, came just in time to be included in the Council's Annual Report for 1973-74. It is pleasant, however, to be able to record that many scholars have been anxious to consult this work, which contains the key to so much of relevance to Scottish education past and present.

The Council's booklet on open-plan schools, *Space for Learning* by Malcolm Corrie, which was published a few months before Dr Craigie's book, has remained in strong demand and has twice been reprinted.

Following the Council's recent establishment of fresh norms for the Burt Word Reading Test, the publication of a revised manual and revised cards (giving words in the order of difficulty established in the renorming) is planned for 1975.

The Committee and the Council have both given strong support to the foundation of the Scottish Educational Research Association, which held its inaugural meeting on 21st September 1974. This association aims to bring together educators and researchers from every branch of the Scottish educational system and thus does much to reinforce the work of the Council itself. Membership application forms can be obtained from the Council.

REPORTS ON PROJECTS

Pupils' Interests, Abilities and Future Progress in School and Work

(Researchers: Mr A D Weir and Dr S J Closs)

This is a project involving 2,500 Scottish secondary pupils who completed a battery of tests of ability, interests and personality in 1970-71 when they were in the third and fourth years. Since the initial testing, pupils have been followed up at school and work, providing data on family background, occupational intentions, SCE attainment and experiences and satisfaction in employment.

From the initial testing and follow-up data, a picture of school leavers at S3 to S6 between 1971 and 1974 has been built up. The data are still being analysed, but material relevant to particular topics has already been extracted. To date the researchers have contributed conference papers and journal articles on the nature of occupational interests, patterns of SCE presentation, and the effects of personality on attainment.

All the pupils having left school, the data set is now complete. The topics which are currently being written up include the characteristics of pupils entering higher education and the job satisfaction of all leavers who entered employment.

Case Studies in Education and Training

(Researchers: Mr A D Weir (Principal), Mr A C Ryrie, Miss Francis Nolan and Mrs E Gordon)

This project, which has involved three partly overlapping phases, is concerned to provide illumination of the apprenticeship process. Two samples of 1,000 boy school leavers were surveyed in 1972 and 1974 respectively. Both had a battery of tests and questionnaires administered to them.

The first phase of the programme is concerned with following up the 400 of the 1972 sample who entered motor trade or engineering occupations. The second phase of the project has involved interviewing, on a number of occasions, 200 of these students and some of the adults involved in their apprenticeship. Despite the fact that a considerable proportion of the apprentices have moved from their original employment, contact has been maintained. The information still to be collected in these two phases should all be obtained within the coming year, and the writing up of the report will then commence.

The third phase of the project, which relates to the 1974 sample of leavers, is laying particular emphasis on family background. For that reason, a series of home interviews of 200 sample members and their parents has been the main means of collecting data. In addition a follow-up interview with these 200 is planned for late 1975. Despite considerable difficulties, the enthusiastic members of the research team conducting the interviews has kept

the work running well up to schedule. This phase is proving to be of particular value in its own right and, provided that the considerable mass of data can be coded in time, will be co-ordinated with the other two phases when the report on them is prepared.

Teaching Strategies in the Primary School

(Researchers: Mr J L Powell (Principal), Mrs M N G Scrimgeour, Mr J Calderhead and Mrs C M Darroch)

This project seeks in the first place to identify sets of teaching characteristics, each shared by a number of teachers, that may be said to constitute distinctive teaching strategies, and in the second to associate each of these strategies with changes in the pupils taught.

The teaching characteristics of 138 primary school teachers in 30 schools in eastern and central Scotland have been observed by members of the research team during the school session 1974-75. Each of these teachers was seen by an observer on five occasions. Each observation extended for approximately one quarter of a school day, and care was taken that all parts of the school day were observed at least once. The reliability of the observations was checked by having the observations of 20 per cent of the teachers carried out by two researchers observing simultaneously.

The recordings were made with the aid of the SCOTS schedule that was developed during the preceding year of the project. This schedule (*System for the Classroom Observation of Teaching Strategies*) seeks to assess 55 aspects of a teacher's way of teaching.* By employing relatively high-inference techniques, it aims to allow the observer to take cognisance of any useful indicators (rather than a predetermined set) while at the same time rigorously controlling observer subjectivity. The observations have been carried out by a team of three. Inter-observer reliability has been checked by means of joint observations of 20 per cent of the sample teachers. Satisfactory levels of reliability have been achieved on all but a few of the variables. A revised version of the schedule is currently being prepared for use later in the project.

The data are now being analysed to establish groups of teachers employing teaching strategies showing many common characteristics.

It is the aim of the project to investigate the effects (on pupils' attainments, learning skills, willingness to learn, etc) of adopting some specific teaching strategies. As a preliminary step, new means of pupil assessment will be developed during 1975-76. These means will include the observation of pupils both in class and under experimental conditions. In this way, it is hoped to be able to provide teachers with information that will help them to assess how far the teaching practices they are employing are conducive to producing the type of effects on their pupils they

* This schedule is described in a paper reprinted on pp 34-39.

would like, and provide them with some means of determining what changes would be likely to produce any desired alternative effects.

The project has further been greatly assisted by the continued salaried secondment to the project by Dundee Education Committee of a member of its staff, Mrs M N G Scrimgeour. The Council gratefully acknowledges this help and also the personal assistance rendered by three Dundee officials, Mr D G Robertson (Director of Education), Mr J J Scott (Senior Depute Director of Education), and Mr W Tait (Adviser in Primary Education). No less important has been the co-operation of the teachers and head teachers involved in the project. Although there is much demand for researchers to keep themselves closely in touch with the "reality of the classroom", to have a researcher observe and analyse one's teaching is not an experience that many teachers would go out of their way to seek. It is, therefore, with a very real feeling of gratitude that the research team expresses its thanks to those teachers who have participated.

Information Retrieval Feasibility Study
(Principal Researcher: Mr J L Powell)

The report on this study, *Information Retrieval in the Field of Education* by John L Powell, was published by the Council in December 1974 shortly after its presentation to the Scottish Education Department.

The report describes the need for a computerised system of retrieval of journal articles in the field of education so that much information that is difficult to trace may be made accessible to those with specific, well-defined needs. A suitable system is described in detail. This system would be able to provide listings of relevant journal articles together with short abstracts to give users an idea of how well each item would be likely to meet his demands. The report emphasises the critical role played by the classifiers of the articles listed in the system files: unless the multiple indexing is sufficiently accurate and of sufficient depth, the "noise"—ie irrelevant output—in the system's output will prove unacceptable to users who tend to require short, fully relevant listings.

Considerable costs are involved in establishing such a system and the benefits derived from its use, though great, are hard to quantify or to express in terms of financial savings. The value of a better governmental decision—better because more securely based on accurate information—may, for example, be large and yet difficult to isolate. No less intangible is the real saving in the time of senior administrators, teachers, etc who are able to trace required information more quickly and more completely. Accordingly, any decision to make available the public finance necessary to meet the initial capital costs and a part of the

running costs requires to be made on the basis of bold judgment rather than precise calculation. It is hoped that the Scottish Education Department will, despite difficult financial circumstances, find itself able to take a bold decision and make available finance on a scale commensurate with the needs of the educational system. It is not enough for research to be done: it must influence the ideas of the right people at the right time.

Pupil Profiles

(Researchers: Dr W B Dockrell (Principal), Mrs P M Broadfoot)

A new procedure for recording and collating the assessments of secondary school teachers has been developed by the Working Party on School Assessments set up by the Head Teachers' Association of Scotland. The procedure, which is based on a profile assessment of basic skills, subject performance, and non-intellectual characteristics has been undergoing field trials in a number of Scottish secondary schools during the past academic year. As well as making the assessments, teachers were asked for their reaction to the procedure's practicability, utility and validity by means of informal discussion and questionnaire. The value of the pupil profile as a basis for guidance is of central concern.

As part of the evaluation programme, meetings have also been held with parents, employers, colleges of education, and other interested groups. Together with a statistical analysis of the assessments, these data will illuminate how far the prototype procedure meets the needs of those involved with making and using assessments of secondary school pupils.

A small-scale study of the validity of this type of school assessment in predicting success after school and the publication of a further progress report are included in the next stage of the project.

Scottish Comprehensive Schools: Teachers' Classroom Management Strategies

(Researchers: Mr M Corrie (Principal), Mrs J M Haystead and Mr S Zakukliewicz)

Following the feasibility work carried out in 1974, a grant was obtained from the Social Science Research Council for an exploratory study jointly financed with the SCRE, of the classroom management strategies of English and mathematics teachers in two urban comprehensive schools. This is seen as a contribution to the understanding of the processes of teaching and learning in schools.

Fieldwork has involved the observation of second-year English and mathematics classes in order to identify typical patterns in the teachers' classroom management strategies. This has been followed by a series of interviews with the teachers concerned to discover the factors they take into account in managing their

classroom situations. The aim in analysis will be to build up a description and classification of teachers' classroom management strategies.

Trends in Secondary Education
(Researchers: Mr G J Pollock (Principal), Mr D Elliot, Mrs E Charleson, and Mrs S Day)

The "Trends in Secondary Education" project involves a follow-up of a random sample of Scottish pupils who originally participated as 10-year-olds in the 1970 IEA project. These pupils are now 14 to 15 years old and are currently in stages S3 and S4 of some 112 secondary schools. Of the original sample of 2,183 some 1,950 have been traced and attempts to trace the remainder are still in progress.

A considerable amount of background data on these pupils is already available (from the 1970 testing, ie, at age 10). This information includes, eg, details of home background, sex, father's occupation, interest in science, liking for school and school subjects, motivation and achievement in reading and science. As part of the current project there were collected in September 1974 further achievement measures in either Reading or Science, further measures of liking for individual school subjects, job and educational aspirations, and attitudinal measures relating to school and motivation. From the schools details of course options provided for pupils at the S2 stage are being collected and it will, therefore, be possible to relate the subject choices of pupils in S3 to both liking for subjects and options available to the pupil.

The current plans for the project envisage the follow-up of these pupils throughout the remainder of their secondary education and into first employment and/or further and higher education.

Among the topics to be investigated are:

(1) how early leaving relates to earlier measured attitudes and motivation;
(2) the stability of the vocational choices of students as expressed at age 14;
(3) the relationship of attitudes and motivation at secondary level to attitudes and motivation at primary level;
(4) how an increasingly comprehensive system of education affects staying on rates and how the gifted and less-able pupils fare in such a system, vis-a-vis the former selective system;
(5) the relationship between specialisation in science and earlier interests and achievement in this field.

It is also planned to make comparisons between 1970 IEA 14-year-olds and the 1974 14-year-olds in terms of the information available.

Interviews have been carried out in the period May-June 1975 with those pupils currently in S4 who were leaving school, with a

view to clarifying further details of their job and educational aspirations, the actual occupation to be entered, and also their reasons for leaving school, their job choice, etc.

In session 1975-76 it is intended to extend the project to include similar interviews with the remaining members of the sample but with additional emphasis on the awareness among pupils of opportunities in further education. It is hoped also to look at the influence in these contexts of the guidance and careers system within the schools. The additional work included in this extension is being supported by a grant from the Scottish Education Department. Since the group of children under investigation is a representative and random sample of Scottish children aged 14 in 1974 the results of such an enquiry would be generalisable to Scotland as a whole.

The project continues until April 1979 when all sample members will have completed their secondary education.

The main project is supported financially by a grant from the Social Science Research Council of approximately £30,000 over a five-year period.

The extension to the project is supported financially by a grant from the Scottish Education Department of approximately £10,000 over a 21-month period.

Alternative Means of Assessing O-grade English

(Researchers: Mr E Spencer (Principal), Mrs T Harrison-Hackett)

This project, which is being carried out in fulfilment of a contract from the SCE Examination Board, started in September 1974. It is under the general direction of a Steering Committee comprising representatives of the Examination Board, the English Panel of the Board, the Scottish Education Department, the Scottish Central Committee on English, HM Inspectorate, and SCRE.

The aims of the project are to investigate the validity, as measured by the results of the O-grade examination, of internal assessments currently carried out in schools for the purpose of producing order of merit lists for submission to the Board; to devise and try out an effective system of assessment, alternative to the present examination, covering the same aspects of English work that it covers and any other aspects which are regarded as important; to devise and try out a method or methods of moderating such alternative assessment to ensure comparability among schools.

Three lines of investigation have accordingly been followed in the first stage:—

A summary has been made to identify methods of internal assessment currently used in drawing up the order of merit lists required by the Board. The information obtained will be used to obtain measures of the validity of different methods of assessment as compared with the 1975 O-grade English examination.

At the same time, the project is seeking to establish a reference criterion other than the existing external examination, so that alternative assessments need not be limited to testing only what the examination tests. After analysis of O-grade questions and marking schemes and consultation with teachers and examiners a list of possible objectives for O-grade English work has been compiled. The research team is now developing a comprehensive battery of assessment techniques to cover as many aspects of English work as possible. During the 1975-76 academic session all these tests will be tried in a small number of schools, and a selection of those practicable on a large scale will be experimented with more extensively. This part of the project's work obviously needs the co-operation of schools and teachers. The policy of the research team is to relate its work as closely as possible to the realities of school life (both researchers are former principal teachers of English) and to involve teachers in discussion of the project as much as possible. To the teachers who have already contributed time, thought, comment and criticism, grateful thanks are extended.

The third line of inquiry has been into the experience of those already administering systems of internal assessment of English. Information has been collected about the advantages and disadvantages of different methods of assessment and moderation employed by various examining bodies in England, Australia and New Zealand. The development of this part of the work will be concerned with finding and field-testing the best way of moderating school-based assessment of English.

Case Study of a New Scottish Open-Plan Primary School
(Principal Researcher: Dr D Hamilton)

Although independently funded by the Social Science Research Council, this one-year project continues the Council's interest in the development of primary schooling in Scotland (see Malcolm Corrie's research report *Space for Learning*, 1974, and the current project "Teaching Strategies in the Primary School").

The study arises from an approach made to the Council by a school that had just opened a new purpose-built, open-plan annexe for the primary 1-3 pupils. It aims to prepare an account of the setting-up and workings of an open-plan setting over a period of 12 months (April 1975-March 1976). Although the research is based in one school, the intention is to address a wide range of concerns that are considered pertinent to the organisation of open-plan schooling. Initially, the study will build upon topics suggested by the school staff and other interested people (eg parents, HMIs, the architects, other researchers). Later, the staff will be invited to comment, during the course of the investigation, upon interim (and provisional) research reports. At present (May 1975) the researcher spends three days per week at the school and plans to continue in

this manner until the study is complete. Thus, within this framework, data collection, analysis and reporting are concurrent and overlapping activities.

A central concern of the research is to collect the experiences and insights of teachers and pupils. A variety of procedures are being used to elucidate and cross-check data. For instance, discussions with participants are placed in context by linking them to observational and "paper and pencil" techniques.

A key task for this research is to acknowledge the range of audiences who might be interested (parents, teachers, etc). In the first instance, a variety of mini-reports are being compiled as the investigation proceeds. In turn, these will be revised in the light of comments received from participating teachers, rewritten around specific themes. These may, where appropriate, be published individually, but, for the sake of overall coherence, it is hoped that these reports will ultimately be published in a single volume.

The Research Services Unit

(Researchers: Mr G J Pollock (Head of Unit), Mr W G Thorpe, Miss S Freshwater and Mrs E Charleson)

Scope of Operation

The Council has always, since its inception in 1928, provided a limited amount of research assistance on an *ad hoc* basis to individual researchers and teachers. Examples of this type of work are, eg, (a) technical assistance given in the item analysis of test results collected as part of a curriculum development project in Science, (b) members of staff serving in a consultative capacity on external committees.

The demands for this type of assistance have increased considerably in the last few years and the Council in 1973 decided to put this work on a more formal basis by establishing a Research Services Unit under the supervision of the Depute Director. The work which the Unit undertakes may be classified under a number of headings:

(1) *Professional advice*
- (a) On the design and planning of research projects.
- (b) On the evaluation of external research proposals.
- (c) On the selection and use of test materials.
- (d) On the selection procedures for training programmes.

(2) *Statistical Services*
- (a) Consultation and general advice on statistical matters.
- (b) Assistance in the analysis of data.
- (c) Validation of selection procedures.

(3) *Collaboration with other bodies in research projects*

(a) Service on research committees and steering committees of external bodies.

(b) Collaboration in joint projects with external bodies.

(c) The carrying out of surveys and other contract work for external bodies.

The main requests for assistance have come so far from education authorities, and national bodies such as SCOTBEC and the National Committee for the In-service Training of Teachers. However, industry, teacher organisations, colleges of education and individuals have also been assisted.

In addition to providing consultancy and advice to a number of bodies, the staff have undertaken six projects of a technical nature involving survey work and data analysis.

Four projects have been completed and reports prepared, viz:

RSU Report No 1: "An Evaluation of Continuous Assessment Procedures in English and General Studies", G J Pollock and W G Thorpe.

RSU Report No 2: "An Evaluation of Continuous Assessment Procedures in Office Practice I", G J Pollock and W G Thorpe.

RSU Report No 3: "An Evaluation of Continuous Assessment Procedures in SNC Statistics", S Freshwater and W G Thorpe.

RSU Report No 4: "Current Standards in Primary Schools", G J Pollock and W G Thorpe.

The first three reports were prepared for SCOTBEC, the fourth for the Stirlingshire Education Committee. The work for SCOTBEC involved the analysis of experimental data relating to various forms of course assessment and has been carried out at the request of the Research and Development Committee of that body.

The Stirlingshire project involved participating in an assessment of standards in Stirlingshire primary schools. The Research Services Unit participated in the initial planning of the project and was responsible for selection of the sample and for the analyses of performance in certain basic skills.

The Unit has also collaborated with the National Committee for the In-service Training of Teachers in a national survey of in-service training among primary and secondary teachers. The coding and analysis of the data was undertaken by the Unit.

The Unit has also undertaken a project initiated by the SCRE itself — a revision of the norms of the Burt (Rearranged) Word Reading Test and to this end a random national sample of approximately 2,000 primary children (aged 5-12) was tested in June 1974. The Research Services Unit has

been assisted in this task by students and staff of colleges of education and by staff of local authority child guidance centres, whose co-operation has been greatly appreciated. A report on the project including revised norms is in process of preparation.

Forthcoming work includes a national survey of present curricular practices which is being undertaken to assist the Scottish Modern Languages Unit in Aberdeen.

Staff of the Unit have also served on a number of external committees in an advisory capacity, eg SCOTBEC Research and Development Committee, Inter-College Research Committee (Colleges of Education), Advisory Committee of SED Research Project on Mathematical Education.

Information Services

(Head of Information Services: Mr J L Powell; Librarian: Miss E Welsh)

The Council maintains a two-way link with organisations and individuals throughout Scotland and indeed throughout the world by means of its publications, conferences (especially for teachers), and exhibitions, and seeks to provide assistance to researchers, administrators, and teachers through its library and its enquiry service.

The Council's publications are listed at the end of this booklet. In addition to the publications listed, the Council produces a twice-yearly newsletter, *Research in Education*, and occasional Research Information Sheets. *Research in Education* is sent free to all Scottish teachers and to all final-year students in colleges of education.

The Council maintains contact with educational bodies and research institutes throughout the world and has an overseas mailing list to this end. Publications are exchanged with many institutions, and proposals for new exchange arrangements will be sympathetically considered.

Administrative and Clerical Services

(Head of Administrative Services: Mr David Kelly; Cashier: Mrs B Colthart; Clerical and Secretarial Staff: Miss S Craigie, Mrs E Cruickshank, Miss H Reaper, Mrs E Smail (Senior Clerkess), Miss L Stark)

In recent years the administrative and clerical services of the Council have expanded in keeping with the growth of the rest of the Council's staff. Improved accounting systems now permit more thorough financial control and more accurate costing of individual projects. A number of grants to individual researchers on the staff of the Council are also administered.

The clerical and secretarial staff produce and reproduce large quantities of research documentation and many research reports, and are responsible for the despatch of publications and the maintenance of the mailing lists.

SCRE RESEARCH FELLOWSHIP

The Council instituted in 1973-74 an annual research fellowship to be awarded to the person considered by an adjudicating committee to have written the best non-doctoral thesis on a topic relating to education, submitted to a Scottish university during the preceding academic year. (Nominations of theses for consideration by the adjudicating committee are made by appropriate university departments.)

The holder of the fellowship may make use of the Council's research facilities and may have reimbursed by the Council costs of up to £250 incurred in the course of research conducted during the year in which the fellowship is held.

The fellowship for 1975-76 has been awarded to Miss Mary Duffy in respect of her Edinburgh University MSc thesis, *Some Aspects of Education and Development: People's Republic of China and Uganda*. In her thesis Miss Duffy surveys the operation and function of education in developing countries and seeks to illuminate the problems and choices existing in developing African countries such as Uganda—where she worked for many years—by contrasting the policies which she observed being followed in China when she visited and travelled in that country. Her own observations and experience are extensively backed up by the written evidence which she assembled in the course of her research.

SUMMARY REPORT OF PROJECTS

Title of Project	Principal Research Worker	Starting Date	Approximate Duration
National Certificate Courses	G J Pollock	1966	9 years
International Project for the Evaluation of Educational Achievement	G J Pollock	1969	6 years (3 Publications May 1973)
Bibliography of Scottish Education Part 2	Dr J Craigie	1970	4 years (Publication 1974)
Pupils' Interests, Abilities and Future Progress in School and Work	S J Closs and A D Weir	1970	6 years
Case Studies of Education and Training	A D Weir and A C Ryrie	1972	4 years
Teaching Strategies in the Primary School	J L Powell	1973	5 years
Information Retrieval: a feasibility study concerning the establishment of a computerised system	J L Powell	1973	1½ years (Publication 1974)
A Survey of Open-plan Schools	M Corrie	1973	1 year (Publication 1974)
Pupil Profiles	W B Dockrell	1973	3½ years
Scottish Comprehensive Schools: Teachers' Classroom Management Strategies	M Corrie	1974	2 years
Trends in Secondary Education	G J Pollock	1974	5 years
Investigation of Alternative Means of Assessing "O" Grade English	E Spencer	1974	3½ years
Case Study of a New Scottish Open-plan Primary School	D Hamilton	1975	1 year
Investigation of the Continuing Professional Education of Teachers in the USSR	Dr N D C Grant	1975	1 year
Development of an Audio-visual Technique for Self-instruction for Professionals Working with Mentally Handicapped	Dr T L Pilkington	1975	1 year

LIAISON WITH OTHER ORGANISATIONS AND CONSULTATIVE SERVICES UNDERTAKEN BY THE COUNCIL'S STAFF 1974-75

The Director

Papers

"Aspects of Child Development", National Course — The Organisation of Primary Education, Callendar Park College of Education (16th-20th September 1974).

"Current Role of the Scottish Council for Research in Education in Educational Research", SERA Conference, Stirling (21st September 1974).

"Responsibility and Irresponsibility in Social Science: the Study of Race and Intelligence", University of Dundee Psychology Society (21st November 1974).

"Freedom of Choice", TESS Conference (29th November 1974).

Articles

"Educational Research in Europe: Some Impressions", *Pedagogica Europea* (in press).

"Education of Handicapped Children: the Social Dimension". Guest editor of Special Edition, *International Review of Education*, vol 20, no 3.

"Making Provision for Handicapped Children", *TESS*, no 468, 6th September 1974, p 1.

"Minding your IQs", *TESS*, no 471, 27th September 1974, p 2.

"Doing our Best for Deprived Children", *TESS*, no 473, 18th October 1974, p 4.

"Different Kinds of Tests", *TESS*, no 477, 8th November 1974, p 2.

"An Obstacle to Freedom", *TESS*, no 480, 29th November 1974, p 19.

"Our Current Religious Malaise", *TESS*, no 483, 20th December 1974, p 4.

Committees

SSRC Educational Research Board.

Council of Europe Working Party on Training and Careers Structures of Educational Researchers.

IEA Standing Committee.

BERA Conference Committee.

Committee to Review the Examination Arrangements for Pupils Completing the Fourth Year of Secondary Education (Scottish Education Department).

Conference Participation

Meeting of the Council of the International Association for the Evaluation of Educational Achievement, St Andrews (23rd-27th September 1974).

SSRC Language and Learning Seminar, Leeds (7th-8th January 1975).

International Association for Educational Assessment, Geneva (27th-28th May 1975).

Council of Europe Working Party, Strasbourg (3rd June 1975).

TESS Conference, Edinburgh (14th June 1975).

Depute Director

Papers

"Recent Research in School Mathematics", Glasgow Mathematical Association (5th December 1974).

"Some Aspects of the Scottish IEA Science Data", SERA Conference, Stirling University (31st January-1st February 1975).

Articles

"Some Aspects of the Current Programme of the Scottish Council for Research in Education", pp 461-476 of *Tanulmányok A Neveléstudomány Köréből 1972-74*, published by Akadémiai Kiadó, Budapest, 1975.

Reports

"Current Standards in Stirlingshire Primary Schools", RSU Report No 4 (prepared in collaboration with W G Thorpe for Stirlingshire Education Committee as part of the work of the Research Services Unit).

Conference Participation

SCOTBEC Conference on Assessment in Business Education, Stirling (10th-11th October 1974).

SUCSE Conference, Jordanhill (3rd December 1974).

SERA Conference, Stirling University (31st January-1st February 1975).

"Educational Measurement: Theory and Practice", Second International Symposium on Educational Testing, Montreux (29th June-3rd July 1975).

Committees SCOTBEC Research and Development Committee.

SCOTBEC Working Party on Assessment of SNC Statistics.

Open University Advisory Committee on Studies in Education.

Inter Colleges of Education Research Committee.

Steering Committee—Stirlingshire Primary Standards Project.

Scottish Educational Research Association—Executive Committee (Secretary).

Committee to Review the Structure of the Curriculum at SIII and SIV (Munn Committee).

Training Services Agency—Training Research Advisory committee.

Consultation A Survey by National Committee for In-Service Training of Teachers.

A Survey by Modern Languages Curriculum Centre, Aberdeen.

Assistant Director

Lectures *Administration and Control of Education in Scotland; Selection for University* and *Teaching Strategies in the Primary School* — Addresses to the Annual Conference of Inspectors of Education, Pretoria, Transvaal (21st and 24th April 1975).

Publications "Information Retrieval in the Field of Education: a Report on the SCRE Information Retrieval Feasibility Study", SCRE, Edinburgh (December 1974).

"A Scottish Alternative to Interaction Analysis", a paper given at the SSRC seminar on Classroom Observation, Leicester (23rd-25th September 1974)*, in *Frontiers of Classroom Research*, Edit. Chanan and Delamont (NFER, 1975).

*Reprinted in abridged form on pp 34-39.

Conference

Second Seminar on Classroom Observation, Leicester (23rd-25th September 1974).

Conference of Scottish Universities Council for Studies in Education, Jordanhill College of Education (2nd December 1974).

Third SSRC Seminar on Language and Learning, Bristol (6th-8th January 1975).

Council of Europe: Meeting of Editors of National Surveys of Educational Research, Strasbourg (26th-28th February 1975).

TESS Conference on Devolution and Education, Edinburgh (14th June 1975).

Committees

Steering Committee, Edinburgh Reading Research Unit.

Steering Committee, Adult Literacy Research Project, Scottish Institute of Adult Education.

Scottish Education Department: *Ad hoc* Committee on Information Retrieval.

Visits, Consultancies and Meetings

Council for Educational Technology (UK): Meeting of Research Study Group, London (29th November 1974).

Visit to Transvaal Education Department (Education Bureau), Pretoria, at invitation of TED to act as consultant (11th-25th April 1975).

British Library: Research and Development Department—Discussion of proposed research project, London (13th May 1975).

SCOTTISH COUNCIL FOR RESEARCH IN EDUCATION

INCOME AND EXPENDITURE ACCOUNT FOR THE YEAR ENDED 15th MAY 1975

Income	*Note*	1974-5	1973-4
Support Grants and Donations	1	£105,681	£85,516
Contributions towards cost of Research Projects	2	20,681	1,200
Research Services Unit Charges	3	1,352	10
Interest on Deposits		854	416
		£128,568	£87,142
Expenditure			
Research Projects	2	£57,227	
Other Research Expenditure	3	15,874	
		£73,101	£45,837
General and Administrative Expenditure	4	55,168	40,584
		£128,269	£86,421
Surplus for Year	6	£299	£721

BALANCE SHEET AS AT 15th MAY 1975

Employment of Funds			1975	1974
Fixed Assets				
Office Furniture, Furnishings and Equipment at cost, less aggregate depreciation (note 5)			£8,000	£7,000
Current Assets, less Current Liabilities				
Sundry Debtors and Prepaid Charges		£11,219		£7,412
Cash on Deposit		5,448		377
Cash in Bank Current Account		301		17,736
Cash in Hand		312		389
		£17,280		£25,914
Less Sundry Creditors and Accrued Charges	£8,065			£3,457
Grants Received in Advance	12			20,253
		8,077		£23,710
Net Current Assets			9,203	£2,204
			£17,203	£9,204

Funds Employed (Note 6)	1975	1974
Publications Fund	£6,858	£4,769
Maintenance Fund	1,000	—
General Fund	9,345	4,435
	£17,203	£9,204

J D NISBET, *Member of Council*
W S CHARLES, *Member of Council*

ACCOUNTING POLICIES

1. *Depreciation*

The office furniture, furnishings and equipment are being depreciated by an overall annual charge, with a view to writing down the assets to approximate scrap value at the end of their estimated useful lives.

2. *Taxation*

The Council has charitable status as an educational body and accordingly has no Corporation Tax liabilities on revenue surpluses or untaxed interest.

3. *Publications Fund*

In order to avoid depletion or distortion of the Council's income and expenditure in any one year, the costs of publishing research findings are normally charged to the Publications Fund. The Fund is maintained from sales of these publications as and when they take place, no value being placed on unsold stocks.

4. *Maintenance Fund*

The Maintenance Fund has been set up to meet extraordinary expenditure on the Council's leasehold premises.

Report of the Auditors to the members of the Scottish Council for Research in Education:

In our opinion the foregoing Balance Sheet and Income and Expenditure Account of the Scottish Council for Research in Education comply with the Companies Acts 1948 and 1967 and give a true and fair view of the state of the Council's affairs as at 15th May 1975 and of the surplus for the year ended on that date.

ROBERTSON, CARPHIN & CO, CA.
Edinburgh, July 1975

NOTES ON ACCOUNTS

1. *Support Grants and Donations*		1974-5	1973-4
Scottish Education Authorities:			
Aberdeen		£623	£632
Dundee		727	718
Edinburgh		1,375	1,395
Glasgow		3,352	3,428
Aberdeenshire		549	506
Angus		375	357
Argyll		200	190
Ayrshire		1,512	1,421
Banffshire		251	126
Berwickshire		70	70
Bute		43	42
Caithness		125	120
Clackmannan		191	187
Dumfries		344	353
Dunbartonshire		1,088	1,078
East Lothian		218	152
Fife		1,367	1,368
Inverness-shire		370	362
Kincardineshire		97	91
Kirkcudbrightshire		103	100
Lanarkshire		2,780	4,720
Midlothian		430	616
Moray and Nairn		256	249
Orkney		65	65
Peeblesshire		48	48
Perth and Kinross		464	464
Renfrewshire (contribution for 1974-5 received in advance in 1973-4)		—	1,570
Ross and Cromarty		249	89
Roxburghshire		150	140
Selkirkshire		56	79
Stirlingshire		820	808
Sutherland		52	38
West Lothian		500	450
Wigtownshire		118	117
Zetland		60	62
		£19,028	£22,211
Less: Received in 1974-5 and added to General Fund (Note 6)		—	4,535
		£19,028	£17,676
Scottish Education Department		85,000	66,000
Educational Institute of Scotland		1,500	1,500
Local and District Associations of Educational Institute of Scotland:			
Aberdeen	£10		
Dundee	2		
Caithness	5		
Fife	10		
Garioch	5		
Kintyre	4		
Stewartry of Kirkcudbright	4		
Lewis	5		
Carried Forward	£45	£105,528	£85,176

		1974-5	1973-4
Brought Forward	£45	£105,528	£85,176
Lochaber	8		
Lochfyneside	1		
East Lothian	5		
West Lothian	10		
Moray and Nairn	5		
Easter Ross	10		
Roxburgh	5		
Selkirkshire	5		
Shetland	4		
Shetland North Isles	1		
Stirlingshire	10		
Stonehaven	2		
Turriff	2		
Wigtown	1		
		114	111
Grant-Aided and Independent Schools:			
Cathedral Church of St Mary	£5		
St George's School for Girls	10		
George Heriot's Trust	13		
		28	223
Association of Directors of Education		6	6
Diploma College Education Association (Scotland)		5	—
		£105,681	£85,516

2. *Research Projects*

	1974-5	
	Income	*Expenditure*
Specially Funded Research Projects		
Factors Influencing Classroom Management Strategies	£2,576	£2,576
Pupil Profiles	4,136	6,820
Trends in Secondary Education	7,605	8,743
Alternative Means of Assessing "O" Grade English	4,864	4,887
Case Study of a New Scottish Open Plan Primary School	730	1,666
Other Research Projects		
International Project (French)	—	812
National Certificate Courses	—	63
Assessment for Higher Education	—	325
Case Studies for Education and Training	770	11,238
Pupils' Interests	—	1,680
Organisation of Secondary Courses	—	9,024
Teaching Strategies in the Primary School	—	9,393
	£20,681	£57,227

3. *Other Research Income and Expenditure*

Research Services Unit	£1,352	£7,443
Information Services	—	4,033
IEA Conference, St Andrews	—	603
Formation of SERA	—	89
Bibliography of Scottish Education	—	2,483
Grants	—	1,223
	£1,352	£15,874

4. *General and Administrative Expenditure*		1974-5	1973-4
Salaries and Other Employment Costs			
Administrative Salaries, Pensions, National Insurance and Pension Contributions		£33,147	£22,167
Staff Travelling Expenses		655	1,105
Staff Training		701	462
Staff Advertising		259	648
		£34,762	£24,382
Office Accommodation			
Rent, Rates and Feu Duty	£5,114		5,110
Insurance	794		423
Heating and Lighting	1,440		706
Repairs and Renewals (including £1,000 Maintenance Fund Transfer)	2,926		1,547
Cleaning	1,076		991
		11,350	£8,777
Other Expenditure			
Telephones and Postages	£2,621		1,915
Printing and Stationery	1,512		2,478
Expenses of Council and Committee Meetings	415		332
Auditors' Remuneration	385		225
Value Added Tax (see note below)	1,845		—
Hire of Equipment	396		426
Depreciation	1,638		1,778
Miscellaneous	244		271
		9,056	£7,425
Note: The Council's VAT status is currently under review and provision has been made for possible claims for repayment of VAT previously refunded			
		£55,168	£40,584

5. *Office Furniture, Furnishings and Equipment*		
At cost at beginning of year	£15,952	£13,189
Expenditure during year	2,638	2,763
At cost at end of year	£18,590	£15,952
Aggregate Depreciation at beginning of year	£8,952	£7,174
Depreciating Charge for year	1,638	1,778
Aggregate Depreciation at end of year	£10,590	£8,952
Cost less Aggregate Depreciation at end of year	£8,000	£7,000

6. *Movement of Funds*

	1974-5	1973-4
Publications Fund:		
Income during year	£2,648	£1,311
Less Expenditure	559	1,032
	£2,089	£279
Fund at beginning of year	4,769	4,490
Fund at end of year	£6,858	£4,769
Maintenance Fund:		
Charged during year (see note 4)	£1,000	—
Fund at beginning of year	—	—
Fund at end of year	£1,000	—
General Fund:		
Grants received in 1974-5 but applicable to 1973-4 (£4,535) and earlier years (£176) (written off in 1973-4)	£4,611	£(2,033)
Surplus for year on Income and Expenditure Account	299	721
	£4,910	£(1,312)
Fund at beginning of year	4,435	5,747
Fund at end of year	£9,345	£4,435

7. *Salary Award*

No provision has been made in the foregoing accounts for salary and related costs of £6,400 for the period 1st January to 15th May 1975 paid after the close of the year to Council staff in implementation of a back-dated pay award. It is anticipated that the cost to the Council of this award for 1974-5 will be recovered in full from the Scottish Education Department and other external sources.

THESE NOTES FORM PART OF THE ACCOUNTS

PAPERS AND PREVIOUSLY PUBLISHED ARTICLES RELATING TO COUNCIL PROJECTS OR WRITTEN BY COUNCIL STAFF

A SCOTTISH ALTERNATIVE TO INTERACTION ANALYSIS*

(An abridged version of a paper given at the Second SSRC Seminar on Classroom Observation, Leicester, September 1974.)

by
John L Powell

When one starts to talk about any theme prefixed by the words "alternatives to", there is an obvious risk of seeming to imply that one is seeking to substitute for an old and inefficient system some bright new panacea. I wish, therefore, to make it explicit that I have no wish to attack interaction analysis or its proponents. To do so would, in my view, be to criticise screwdrivers for not being efficient chisels. My subject here is a newly devised, relatively high inference system designed to serve a function different from, although related to, that of interaction analysis. By high inference I mean a system in which some reliance is placed on the observer's interpretation of what is happening.

Low inference measures permit one to look intensively, and with a high degree of objectivity, at a *small sub-set* of the complex set of behaviours exhibited by an individual (or perhaps a group of individuals) interacting with another individual or group. Usually a single aspect of the interaction is highlighted. The view of the classroom situated is a partial one. What is discovered may, for example, permit a detailed examination of one or more aspects of teaching technique, such as type of questioning employed, but ignore all other aspects. It may provide, at best, very limited contextualisation of those chosen aspects. Moreover, since the output is typically in the form of frequency counts of discrete actions or sequences of actions, added interpretation is required.

Many of us, while grateful for such revelations as the microscope of interaction analysis may be able to provide, yearn for a more global approach. Of course, as soon as one attempts to look at many aspects of how a teacher is teaching, one finds it impracticable to use such methods. A higher level of inference is

* A complete text of this paper is published in *Frontiers of Classroom Research* (Edited by Gabriel Chanan and Sara Delamont) (NFER 1975).

required. The whole process of observation has, therefore, inevitably to become more subjective, *at least at the time of the observation*. (Since, however, the output of interaction analysis normally requires interpretation, it is usually not itself wholly free of subjectivity.) Where subjectivity cannot be eliminated, it must as far as possible be controlled. How such control may be attempted is illustrated in the work described below.

In October 1973 The Scottish Council for Research in Education began a project which has come to be known as *Teaching Strategies in the Primary School*. The principal undertaking so far has been the production, by Mabel Scrimgeour and myself, of a classroom observation schedule which we have called SCOTS (System for Classroom Observation of Teaching Strategies). Limited trials of this schedule were carried out during the period of construction and development, and these led to substantial revisions. The schedule is being used during the 1974-75 school session when it will be used in recording observations of some 140 Scottish teachers. It may later be modified and published. The schedule is intended for use only in the middle and upper forms of the primary schools.

The term "teaching strategies" is intended to cover all aspects of a teacher's teaching and classroom management with the exception of "methods" in the narrowest sense. Thus, for example, it is not concerned with whether a teacher uses phonic or non-phonic methods of teaching reading, but it is concerned with those aspects of teaching practice that cut across these methods and probably influence the ways in which they are employed.

The SCOTS schedule in its current form makes assessments of 55 aspects of a teacher's strategy, each one relating to what has been judged to be a unitary dimension of teaching behaviour. The selection of these dimensions has, to some degree, been an arbitrary process. It was based on judgments made during unstructured or partially structured observations of more than 40 teachers in the city of Dundee. Those aspects of behaviour noted during these observations and judged to be of potential significance were analysed to determine whether the observation variation lay on a unitary dimension or was the product of concurrent, but independent, variation on more than one *behavioural* dimension. Each dimension was then defined, special attention being paid to the extreme positions to ensure covering the full range of variation that might be encountered. These extreme positions were then arbitrarily designated 1 and 5, and intermediate positions—2, 3 and 4—defined so as to divide the range up reasonably evenly. Where necessary zero was used to indicate non-applicability to a specific case. The result is something looking very like the questions of a multiple-choice test of reading comprehension. It is, however, the observer who has to pick whichever option best described what he has seen.

It is necessary firstly to discuss the general validity of using a schedule of this sort. I have already mentioned the problems of controlling observer subjectivity. Control can best be achieved by requiring observers to rate separately relatively large numbers of aspects of behaviour that are not only carefully delineated, but fairly narrow in scope. To ask an observer to rate, say, "teaching effectiveness" would, of course, be to invite disaster since the ratings would be likely to reflect the observer's own opinions of what constitutes good teaching. If, however, narrow dimensions of teaching behaviour can be defined and behavioural markers indicated, the risks of bias *in trained observers* can be reduced to negligible proportions. The markers of different levels on a dimension of teaching behaviour can be extremely variable and in some cases it is not possible to do more than indicate typical markers. Other manifestations have to be matched to these by the observer. This is not, however, necessarily a disadvantage. Indeed, the very purpose of employing a higher inference schedule is to make maximum use of the trained observer's ability to observe and interpret a large number of behavioural clues, and in particular to take cognisance of any "counter-indications" that may be present.

This last point is particularly important because closely similar teaching behaviours can "mean" quite different things according to the contexts in which they occur. One depends on the observer to distinguish between the superficial and the fundamental, between the essential and the inessential, between the appearance and the reality. To interpret what is occurring the human observer can take into account *whatever* evidence there is available to enable him to make as reliable a judgment as is possible on each of the dimensions of behaviour he is assessing. The global view which it is the purpose of the schedule to provide comes from the combination of all these assessments. The observer is, in effect, classifying each teaching strategy in more than 50 ways. (If making so many assessments seems a lot, it should be noted that trained observers find the task manageable. By no means all the assessments are difficult to make and there is adequate time to make them.)

The items in the SCOTS schedule have for convenience been arranged in seven groups: (1) those relating to practices about which the teacher is questioned to supplement what may be observed (seven items); (2) those relating to the direction or control of work (five items); (3) those relating to teaching or learning (nine items); (4) those relating to motivation, class control, and discipline (11 items); (5) those relating to underemployment of pupils (four items); (6) those relating to teacher personality and relationships with pupils (five items); (7) miscellaneous (mode of performing administrative functions, pupil talk, etc.) (13 items).

In the case of most items, the recordings made during each successive observation can be regarded as progressively closer

approximations to the "truth". Very tentative entries are gradually replaced by ones about which the observer feels reasonably confident. This can, however, be true only of stable features of a teacher's classroom behaviour. Though there appear to be large numbers of such stable features, some features do vary from lesson to lesson, perhaps in response to the nature of the activity. Such variation is obviously more difficult to summate, though there may be no difficulty within any single observation. In some cases some sort of approximate "averaging" at the end of the five observations* makes sense, but more often it does not. Two 5's, two 2's and a 1 may be very poorly represented by a 3 as an average; the 3 may be simply wrong about all the occasions. For this reason in a number of cases a separate "summative" version has had to be produced. In some cases this involves recording the extent of the variation; in others the most "extreme" occurrence (at one end of the spectrum) is taken as the most significant feature.

Though the schedule operates at a behavioural level, many of the behaviours are likely to be markers of more fundamental, and probably more important, characteristics. Thus, for example, though one item describes how responsibilities are allocated (if at all) amongst pupils, its main aim is to reveal whether the teacher regards responsibility as an important experience for all pupils (and particularly the least able) or whether the giving of responsibilities is no more than a way of relieving the teacher of some work. Similarly another item, while recording the relative prominence of competition or co-operation in respect of work, serves indirectly to record how far situations arise where the successful pupil is likely to find his success underlined and the less successful pupil his failure. Yet again, where an item ostensibly describes a range of ways of eliciting answers to questions in the cognitive domain, it in fact is seeking to reveal the *function* being served by the questioning—whether, at the one extreme, it is a scarcely disguised form of teacher statement, or whether, at the other, it is a means of getting pupils to arrive at answers by means of reasoning.

The schedule is intended to be value-free, despite the fact that almost all the behaviours described in it are ones about which teachers and others commonly make value judgments. The point to bear in mind is that not everyone making a value judgment will agree on which of the five behaviours defined in an item is the "best". The range of an item is *not* from good to bad but from one extreme to the other. It is open to the individual to value any extreme or any intermediate position the most highly. The function of the observer is to record accurately and perceptively. If he makes value judgments, they are private, and irrelevant to his task.

* Five observations, each of a quarter-day's duration, have been found an adequate minimum. All parts of the school day are observed.

The schedule can record teacher-centred and pupil-centred teaching with equal facility. The fact that, though it uses the spoken word as evidence, it uses actions no less, is clearly important here. It should be noted that often interaction analysis systems suit only teacher-centred situations and that most are highly dependent on verbal interchange.

The risk of misinterpreting what happens in a classroom is much diminished by the fact that the observer both has time to follow occurrences through before assessing them and may take into account anything he has observed that may lead to the making of a more valid judgment.

Construction of a schedule of this nature gives rise to considerable technical difficulties. For instance items have to be uni-dimensional since if there is more than one variant each operating independently the observer is likely to be faced on some occasions with contradictory indications.

Even given a dimension, the problem of ordering the items in a defensible sequence can be formidable. Good examples of the sort of areas where it may be difficult to find dimensions are paralinguistic signals and "slowdowns". Paralinguistic signals can relate to almost any dimension of behaviour and cannot be isolated. They have therefore to be treated by the observer as simply one of many sources of evidence for arriving at his assessments of dimensions of behaviour. Rather similarly, teachers slow down for many different reasons. Slowing down in itself means nothing. One may be able to incorporate specific instances of slowing down in different items in the schedule, but it is not a dimension in its own right.

A behavioural schedule clearly requires definition in behavioural terms. In practice, however, the variety of manifestations of essentially similar behaviours is so great that defining for the observer all possible behaviours would yield a schedule of unmanageable proportions. Frequently the observer can only be given examples of the type of behaviours that should be taken as good indicators. He has to assess for himself what other behaviours should be regarded as equivalent. Nonetheless it should be stressed that behavioural indications should be given as fully as is reasonable.

Using a schedule such as SCOTS clearly requires a good deal of training. Not only has the observer to become familiar with it but he has to learn the ways in which many of the descriptive terms used are operationally defined. No less important is experience of the range of behaviours likely to be found. Inexperienced observers tend to use too extreme ratings—say a 5 when only a 4 is justified—simply because they have never experienced anything more extreme than what they are looking at. The observer who knows the full range has no difficulty. In short, placing a teacher on any of the dimensions does involve some relative assessment as well as matching to the behavioural descriptions. The behavioural

descriptions often cannot be exhaustive enough to avoid some dependence on assessment of "level".

This last point may give rise to doubts about observer reliability using the SCOTS schedule. Data on inter-observer agreement are in the process of being gathered, and experience so far suggests that acceptable levels are attainable.

It is hoped that, by the use of various forms of cluster analysis, we shall be able to isolate groups of teachers each having what may reasonably be termed a common teaching strategy. Thereafter we aim to try to establish associations between the employment of these strategies and patterns of pupil outcomes in the cognitive and affective domains. This will be a formidable task, but it is essential to attempt to provide teachers with some indications of the effects of some of the most basic elements of their teaching techniques, elements that may well be far more significant than any teaching "method" that may be adopted to teach a specific subject or skill. The variables we are attempting to measure are no doubt in most cases themselves only surrogates, but it is in terms of these surrogates that a teacher commonly thinks when deciding what to do. What the surrogates stand for may not be clear and may not matter in practical terms. Whether we have included in the schedule all the elements of teaching behaviour that we should is of course an open question. There can be little doubt that some of our dimensions will prove irrelevant and that they will constitute only "noise" in the analysis. Identifying which these are will no doubt be a major difficulty. It may be argued that our coverage would have been better had we based the schedule on some theoretical framework. Our view is that the "state of the art" does not permit this. Various, possibly overlapping, subsets of the items relate to various possible theoretical frameworks. It is our hope that the ecletic approach of the SCOTS schedule will help in the identification of the most useful frameworks.

COMPENSATORY EDUCATION AND RESEARCH

(Paper presented at DES Course N302: *A Priority in Education*. Lancaster, 14th to 19th July 1975.)

by

W Bryan Dockrell

Teachers like yourselves know about educational deprivation in a way that the researcher as researcher cannot. Your way of knowing is by direct personal experience. You see these children daily and work intimately with them. You know them as people not as abstractions. This is the kind of knowledge that conventional educational research cannot provide. Like many of you,

I know educational deprivation from the inside. I grew up, in the Lancashire phrase, on the pit brew. I lived in a mining community and went to school there. When I read the Educational Priority Areas Report, I know the situation in the West Riding mining villages in a way that I do not know the situation of the West Indian families in the Midlands. I can test the findings of the researchers against my own experience. I know when they ring true and when they do not. Like many of you, I have lived and taught in London and Manchester. I know, therefore, what it is like to teach in situations such as Midwinter describes in Liverpool but I do not know what it is like to grow up in that kind of setting.

This kind of statement may seem strange from a researcher. Not many years ago it would have been, but now more and more of us are becoming aware of the limitations of the traditional positivism. We are accepting what Freud said many years ago, that more can be learned about psychology from fiction than from science. As researchers, we inevitably deal in generalisations, in averages, in correlations, in general tendencies. It sometimes leads us to make generalisations which may be true possibly of most of the children but not of them all and conspicuously false about some. The Educational Priority Areas Report is rightly concerned with the language handicaps of children from mining villages. It is important though for us to remember that D H Lawrence was the son of a miner and grew up in a mining village. He was nonetheless able to develop a remarkable mastery of the English language.

What I have to say will refer to the research literature but you must test it for yourselves and see whether it rings true to you and if it does see what help it can give you in helping the children you teach.

Research makes many contributions to our thinking. The first is at what Whitehead has called the "stage of romance". You will recall from reading Whitehead's *The Aims of Education* that he defines three stages: the stage of romance, the stage of precision, and the stage of generalisation. The stage of romance is where knowledge is not dominated by systematic procedures. It is when we experience "the excitement consequent on the transition from the bare facts to the first realisations of their import, of their unexplored relationships".

We know that the poor we have always with us, but concern for the educationally poor has only recently become fashionable. This concern stemmed in large part from the speculations of researchers like Hebb in Montreal and Kretch in California, who demonstrated in their work with animals that the performance of adult animals could be markedly depressed by environmental deprivation when young and conversely it could be boosted by environmental richness. It was this early work that led to

McV Hunt's seminal book *Intelligence and Experience*. A book which revolutionised thinking in psychology and education about intelligence. Before this, relatively little stress had been placed on experience in the development of human intelligence and the research which had emphasised it had been discounted. Hunt brought these researches together and began the exploration of their relationships.

Another book which was perhaps even more important in its impact on education was Bloom's *Stability and Change in Human Characteristics*. This too is an exploratory, speculative book which on the basis of existing evidence questioned established beliefs and stressed the importance of experience in the early years in both school learning and adult intelligence. It was this book more than any other which developed the climate of opinion that provided the basis for our current concern with preschool and nursery education.

I should like to stress again that both of these books are speculative and romantic in Whitehead's phrase. They were the "first realisations of previously unexplored relationships".

These books led to the acceptance of notions like deprivation and compensatory education. If children's failure to learn in school was a result of deficiencies in the child's environment, either at home or in the community, then it should be possible to design programmes which would compensate for these limitations and enable deprived children to catch up with those who have the advantages provided by middle-class homes.

There are a number of difficulties with this approach as Bernstein has pointed out. One of the most obvious to teachers is that often poor children are not merely deprived outside the school but also within. Frequently, the schools they attend are materially inadequate and have a high turnover of teaching staff. Our first task is to provide adequate education. The second problem is that this approach implicitly blames the community, the family and the child. We can easily slip into talking about inadequate families but by so doing we divert attention from inadequate education and focus it on the family. The stress on the preschool period has led to fragmented thinking. There has been a tendency to stress the need for preschool and nursery provision without recognising the need to rethink infant and primary programmes. Perhaps the most important of the difficulties with the compensatory approach is highlighted in Bernstein's title *Education Cannot Compensate for Society*. In America particularly, there has been a tendency to regard education as the major means for achieving the social aims of society. This is exemplified in the reluctance of the Americans to establish a National Health Service, for example. Education has been asked to carry too heavy a burden.

There are other fundamental problems with the concept of

compensatory education which have not been resolved. What are we aiming for? Are we looking for a basic level for all, beyond which everyone would be free to move according to their own interests and abilities? Are we anticipating a uniform level of achievement so that all will have the same level of achievement—five "O" grades or a PhD? Or do we mean an equal social distribution of achievement so that the number of students admitted to university from working class and middle class homes is proportionately the same as in East Germany. The notion of a universal minimum allowing for individual achievement beyond that is unacceptable to the social reformers and indeed sparked off compensatory education. The notion of equal opportunity has been replaced by the notion of equal achievement. Again it is Bloom who has taken this approach to its logical conclusion in his notion of "mastery learning". He wants the aims of every stage and level of education to be precisely defined and for it to be the responsibility of schools to bring children up to this common level. Those who reach it early would be excluded from further education until the others had caught up. It is not surprising to me that this approach has not commended itself to many teachers, but has been acceptable to university lecturers particularly those providing basic courses in preparation for more advanced study, eg mathematics for physicists, statistics for sociologists. Not the least of a teacher's problems would be stopping children who had already achieved the designated level moving ahead on their own. We could, I suppose, blindfold them to stop them from doing any more reading. Most of us, I think, would find the expectation that we were to bring all children up to the level of the most able quite unrealistic.

The notion of equal access to further and higher education is at least simple to arrange. Halsey has suggested a quota system, like that experimented with in Eastern Europe since the late 1940s. If there are 60 per cent of the population working class, then 60 per cent of the admissions to universities must be working class. It is quite easy to do and in fact many American universities are attempting something along these lines with black students. When it has been tried in this country, however, as with the Open University, it has been very difficult to implement. Not enough working-class people seem to be interested in what universities provide. They may want continuing education, but it is of a different kind. An educational procrustean bed is as difficult to establish at the tertiary level as it is at the secondary level.

The second of Whitehead's stages is the stage of precision, where the relationship is subjected to exactness of formulation. It is the stage of grammar, the grammar of language and the grammar of science. The next step facing the researchers, therefore, was to be precise, to specify the deficiencies which held

children back and which could be compensated for. This is the stage which many of the reformers find unnecessary. If, on the basis of animal studies and a scattering of research findings, it seems likely that poor children can be helped, then why not get on with it? Indeed, this was the approach behind the American Headstart programme which financed a proliferation of compensatory projects throughout the United States. In a telling phase, Halsey points to the choice between "egalitarian policies or obscurities of unnecessary research". The vague awareness that a restricted environment can limit intellectual development and an enriched environment can stimulate it is not, however, enough for the researcher. He wants to go on beyond this and analyse it.

The first area of deficit isolated was a verbal deficit. In a study I conducted some 20 years ago, I pointed out that "of two children of the same IQ but different socioeconomic status, the one of the higher social status will tend to be better in English but not in arithmetic . . . the correlation between socioeconomic status and intelligence test score can be attributed to verbal factors which presumably are determined by the environment", and I went on to conclude that "a stimulating environment where the cultural deficiencies of the home can be compensated for in part may be provided in kindergartens . . . elementary and secondary school will probably not be able to compensate adequately for the low level of conversation, of entertainment and of cultural interest in many homes, but the school curriculum can be planned with more attention to ultimate future achievement". The most detailed linguistic analysis of social class differences in language use has been made by Bernstein. In an analysis based on Halliday he has listed four contexts of language use: the regulative, the instructional, the imaginative and the inter-personal. In each of these contexts language can be used in a universal way to produce generalisations or in a particularistic way which requires access to the situation which originally led to the speech if it is to be fully understood. Where the use of language is in general specific or particularistic it will lead to a restricted code and where it is universalistic it will lead to an elaborated code. The problem is that schools are concerned with the transition to and development of general universalistic orders of meaning. One group of children has language and habits of thought which fit in with this universal approach, others do not. The child with a restricted code may well have a rich and imaginative use of language, he may well be sensitive in his relationship with other people. He will have difficulty, though, in instructional contexts.

An entirely different approach is the one that stresses motivational deficit. This is an old approach for teachers. Indeed, I recall that, not many miles away from this meeting, some 30 years ago, it was the practice of a primary teacher to beat unmercifully two boys because they had not managed to learn to

read and to do arithmetic as well as the rest of us and were, therefore, "lazy". This particular approach to motivation did not help. Eventually the boys were moved to a residential school where I can only hope their treatment was more humane. The importance of motivation in academic achievement is well illustrated by a little story. You may recall that at one point President Johnson's wife said that half the black four-year-olds in the big cities did not even know their own names. To test this, one researcher, who was running a preschool project, instructed the teachers to offer a biscuit to all children who could say their own names and the half who had previously said they did not know it now found they did, with one exception. It is asserted that on arriving at the centre as the children were leaving, the researcher heard the one exception saying to his elder sister, "The fuzz tried to bribe us into giving our names; all the others did, but I held out." I think we would all recognise that many children are simply not interested in the objectives of the school. We would be foolish to assume, however, that they came from "bad" homes. In a Canadian study, Fotheringham found that the parents of children who were doing poorly in school were as good as the parents of the children who were doing well in school by the conventional measure of nutrition, medical care, time spent playing with them and so on. Where they differed was in their concern with education and their sense of its importance.

Kagan among others has stressed in his book *Change and Continuity in Infancy* the importance of a third aspect, "attentiveness". He has pointed out that, even under the age of two, social class is related to attentiveness, as well as to language, though not to IQ as conventionally measured or success in Piaget-type tasks. He attributes this difference to the way mothers interact with their babies. He talks about "reciprocal, vocal and verbal stimulation" by which he means playing with the child in a responsive way. As another researcher, Gordon, has put it, the crucial factor is "rapid interchanges of mother-baby interaction in which the mother elicits or directs, followed by the baby responding, followed rapidly in turn by further mother action". It is important to note that Kagan points out that his mothers from all social groups apparently "felt affection towards their infants, but they differed in concern with and encouragement of children's psychological development".

The traditional approach attributes educational backwardness to intellectual deficits which are genetically determined. This too has its advocates—in this country, Eysenck, and across the Atlantic, Jensen. Jensen has tried to specify precisely the differences that exist between the social classes. He has a two-stage theory of intelligence: the first and necessary stage is one of rote learning, the second stage is a reasoning or problem-solving stage which not everybody reaches. He points out that all social classes are

approximately equal in the first type of scale but differ sharply in the second. On the basis of analysis of test scores he argues that this difference is genetic. The logical "compensation" from this point of view is sterilisation for the poor and this has indeed been advocated.

Part of the stage of precision is the experimental verification of the exact formulations developed and this is where educational research as we have traditionally known it has come in. Many of us think of research exclusively as this verification of hypotheses. The generation of hypotheses which I have been discussing so far is surely equally important. Since Young's major book we have been concerned that there has been a great deal of innovation in education without evaluation.

Too often what appear to be good ideas have been accepted as fads without adequate testing. This is well illustrated in the field of compensatory education by the director of one of our largest education authorities. He announced that his authority would continue with a particular programme even though the E.P.A. study had failed to find any benefits from it. I do not know how he reconciled his decision with the expressed objective of EPA to find which approaches have the most instructive effect since the proposed continuing with one which had no effect, presumably at the cost of others which were of some benefit. I take it that what he meant was that he was not convinced by the research and preferred his own subjective impression.

Before I discuss some of the more important research studies, I think it important to clear up the problem that apparently confused this director of education. Marshall, the economist, has said that "every economic fact, whether or not it is of such a nature as to be expressed in numbers, stands in relation as cause and effect to many other facts and since it never happens that all of them can be expressed in numbers, the application of exact mathematical methods to those which can is nearly always a waste of time, while in the large majority of cases it is positively misleading". This is an approach to research which is shared wisely by many teachers and by this director of education. It is very difficult to get from the numbers that researchers produce an adequate picture of the value of any educational practice. As Marshall points out, there are always so many other facts which cannot be expressed in numbers. On the other hand, we must remember Darwin's caution and always be ready to "give up any hypothesis as soon as facts are seen to be opposed to it . . . (and to) distrust greatly deductive reasoning in mixed science"—and educational research is a very mixed science. Specific research studies must therefore be viewed with caution and indeed with scepticism. It is necessary to know a great deal more about what has gone on in the classrooms than can be gained from the descriptions of the researchers and certainly from the numbers which they produce.

The first project I am going to describe is a programme of the New Zealand Play Centre Federation reported by Grey. These centres have no teachers. Parents train as supervisors of their own and others' two-and-a-half to five-year-old children. "Parents report that through their studies they have come to notice how alert their children are; and how when the alertness is catered for satisfyingly the children are more satisfactory people to be with." This programme has been extended, particularly by Maoris, so that play centres are becoming family education or resource centres. These programmes, though comparable in many ways to traditional kindergartens, give attention particularly to the principle of sequential gradations and to the practice of drawing out the original in children and adults. While formal statistical evaluation of this work is not available, it is significant that the Van Leer Foundation has supported the extension of this approach to the Australian Aborigines. Indeed, Maori supervisors were brought in to establish the programme in Australia. Later, Aborigines who had qualified as helpers in the Aboriginal family education centres visited the Maori centres in New Zealand. Similar programmes are developing in the Philippines and Fiji. This is an attempt to develop a programme which recognises the importance of mother/child interaction from the beginning.

A project which makes substantial claim is Heber's Milwaukee experiment. He claims that after five years the children receiving his programme had an average IQ score of 126 compared with an average IQ of 95 for a non-treatment comparison group. This programme focused on children of low-ability mothers in a deprived area. The intervention began at about three months and was carried out on an all-day basis five days a week. Emphasis was placed on language development, on perceptual motor development and on social and emotional development with the treatment prescribed by professional specialists but delivered by "teachers" who were workers from the same neighbourhood. They had received intensive on-the-job training but were not qualified teachers. So far, very little information about the details of this programme are available. There have, however, been criticisms which suggest that the experimental and control group were not really equivalent and that the difference in IQ after five years may reflect differences in the children who were selected for the programmes rather than being an effect of the programme itself. Other somewhat similar programmes have had effects which were not nearly so striking.

Perhaps the best known of the compensatory programmes is that reported by Bereiter and Engelman. It had a precise focus designed to give deprived children the specific language skills that they lacked. It tried to teach them, for example, the use of prepositions. It was a long way from the sophisticated linguistic analysis of Bernstein. The children did learn the skills and did

learn to use them. When they started school they were able initially to make more progress than those children who had not had the same opportunities. However, the advantages did not persist.

These three programmes illustrate the dilemma of the educational researcher. He can, like Bereiter and Engelman focus on the specific deficiencies which have been isolated and produce a narrow programme with clear but limited effects, or he can, like Grey, cast his net wider with the consequence that it is difficult to specify the precise sources of any changes he manages to obtain.

Whitehead's final stage is the stage of generalisation, the establishment of relationships which are generally valid. This is the problem which faces all evaluation of educational procedures. If we can isolate advantages in particular classrooms or special settings, can other teachers be taught to use the same approaches and obtain the same benefits? As far as compensatory education is concerned, the only honest answer is that we have not yet uncovered any educational practice of demonstrated general value. The Westinghouse Corporation's analysis of the Headstart programme was disappointing. They could find no evidence from a great many studies which followed many different approaches, of general conclusions which could be of guidance to teachers. Others reviewing the same research have pointed hopefully to isolated findings which suggest that programmes with precisely defined aims and an emphasis on language development had the greatest long-range impact on success in school work. Unfortunately, there were other projects which seemed to follow the same approaches which had very little impact indeed. The same conclusion must be drawn from the Educational Priority Areas Projects in the United Kingdom. As Halsey himself points out, very few of the differences between the experimental and control groups in the amount of improvement between pre-test and post-test were consistently significant. As with the American studies, it is possible to look at the data for hopeful trends. These are indeed hints and suggestions but the only fair generalisation is that while there is reason to be hopeful we cannot claim to have discovered specific, general valid ways of helping deprived children overcome their handicaps.

The research has gone through Whitehead's cycle and we are back at the beginning; we are back at the stage of romance, the stage of speculation and exploration. The researchers are now looking to the very early years and months of life. "It may be wise to consider initiation of educational procedures with poor families during the first two years of life" suggests Kagan. The wording is appropriately cautious. His own studies suggest that these are the crucial years. We do not yet have any precise definition of the ways of child care that should be taught to poor mothers to enable their children to achieve their full intellectual potential. A

second concern of the researchers is what is called "follow-through". It became clear from the American and indeed the British studies that gains were easily dissipated unless the help were continued in the infant and the primary schools. Projects of this kind have been developed and are being tried out in Britain and the United States though no conclusive findings have yet been reported.

A third interesting development is a return to a concern with adolescence. The Clarkes, a good many years ago, pointed out that the abilities of retarded children continued to develop long after the point at which it was thought intelligence ceased to grow. Piaget and his followers too have emphasised the importance of the transition from concrete to formal operations at about adolescence. Most children pass successfully through the stage of concrete operations no matter what their social background. As Vernon has pointed out, there are very few cultural settings which do not provide an opportunity for development at this level. The transition to formal operations or abstract reasoning though is far from universal and, according to Bruner and his colleagues, is a function of formal education. Programmes are now being developed in the United States which recognise that many poor children reach this stage later than those from more favourable backgrounds. These programmes recognise too that the transition which occurs without specific instruction for the more able may need specially designed programmes for the less able. Secondary programmes in maths and science are being devised in this country with these objectives in mind.

A fourth theme which is emerging or perhaps re-emerging is a fear of early formal schooling. The stress on the early years which came from Bloom's speculations led in some cases to the development of formal instructional programmes for very young children, in some cases an attempt to teach reading and numerical skills at an early stage. There were always those who doubted the wisdom of this approach and now some researchers are pointing out once again that the necessary physiological and neurological development for reading does not take place in some children until the age of seven or eight. Reading, therefore, should be encouraged but not forced. After all in those countries where formal schooling does not begin until seven or eight the children seem to catch up by the age of 14. This does not mean to say that there should be no formal language programmes for young children, merely that the concern should be with those aspects of development which it is appropriate to provide. We should not simply move down the school skills and materials which are covered more effectively at a later age.

There is too some doubt about the value of the more focused preschool programmes. It is true that those programmes which set out with specific objectives have been able to demonstrate their success most effectively. This, however, may be the kind of error

that I referred to earlier where too much emphasis is placed on the measurable and too little on other equally important aspects of education and development. The animal studies of Kretch which were influential early on showed that it was breadth and variety of experiences not specific training which were most effective.

Finally, there is a reconsideration of the objectives of education. The publication of Jencks' book on *Inequality* with its claim that ability, education and attainment do not explain much of the variation in men's income has led to considerable soul searching across the Atlantic where expenditure on education had been justified both for the individual and society by its supposed economic benefits. He arrived at the not very startling conclusion that if you wanted everybody to have the same income the best way to do it was to give them the same wages and not give the children of the poor scholarships to university. It seems likely that educational attainment is not very closely related to income and probably not in this country at least related to power or prestige either. Other factors like opportunity, energy, ability and family background may be equally important. Why then should we be concerned about educational deprivation at all?

On one side of the argument there is the charge of the arrogant imposition of a way of life and a set of values on people who do not share them and do not wish to share them. I have two friends, one a bricklayer who earns £120 a week, another a headmaster who earns £6,000 a year. They get the same amount of money. They spend it in very different ways. Their values, their ways of life, are quite different. Why should the headmaster be free to impose his values on the children of the bricklayer and the bricklayer not free to impose his values on the children of the headmaster? We need to think more carefully than we have done in the past about the effects of education, intended and accidental. The other side of the argument asserts that there are some reasons for preferring one way of life to the other and certainly that society has the responsibility to make available to all children an opportunity to accept or reject, for example, classical music (we can rely on EMI and the others to make sure they have access to pop); it is the responsibility of society and of education to offer children access to painting as well as to advertising and the colour supplements; it is the responsibility of the school and society to introduce children to outdoor activities which they themselves can continue to practice later on (we can rely on others to draw their attention to the pleasures of watching football on TV).

If we are to justify compensatory education, then it has to be justified on the same basis as education in general, as a consumer good, as a way of making sure that children and adults have a real choice in the occupations they will pursue and the pleasures they will enjoy.

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